

Effectiveness of a School-Based Intervention in obese childrens

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Abstract

Background: Obesity is one of the most prevalent nutritional disease of children and adolescents in many developed and developing countries [1]. The World Health Organization (WHO) has declared overweight as one of the top ten health risks in the world and one of the top five in developed nations [2].

The National Health and Medical Research Council have recently developed the 'Clinical practice guidelines for the management of overweight and obesity in children and adolescents'. Physical activity has been put forward as an important and modifiable factor influencing people's health. Participation in regular physical activity has been associated with substantial health benefits [13].

Hypothesis: H1-School based interventions are effective in increasing the physical activity and improving the physical fitness of obese children in age group between 10-16 yr.

Null hypothesis: school based interventions are NOT effective in increasing the physical activity and improving the physical fitness of obese children in age group between 10-16 yr.

Research Question: Whether school based exercise programmed is effective in improving the physical fitness of obese children in the age group between 10-16 yr.

Purpose of study: Due to increasing prevalence of childhood obesity in India and its impact on health in their adulthood ages, primary healthcare interventions should be started in early stage of life.

This study is undertaken to see the effectiveness of school based intervention in school going children in reducing their obesity. School based interventions means, incorporation of physical activity education and exercise programme within the school P.T (physical training) curriculum.

Keywords: Childhood obesity, school based intervention, physical activity, physical fitness.

THESIS SUMMARY

Introduction

Obesity is one of the most prevalent nutritional disease of children and adolescents in many developed and developing countries [1]. The World Health Organization (WHO) has declared overweight as one of the top ten health risks in the world and one of the top five in developed nations [2]. Existing WHO standards and data from 79 developing countries including a number of industrialized countries suggest that about 22 million children five years old are overweight worldwide [3].

The National Health and Medical Research Council have recently

developed the 'Clinical practice guidelines for the management of overweight and obesity in children and adolescents'.

The World Health Organization has described obesity as one of today's most neglected public health problems, affecting every region of the globe [1].

A recent study conducted among 24,000 school childrens in south India showed that the proportion of overweight children increased from 4.94 % of total students in 2003 to 6.57% in 005 demonstrating the time trend of this rapidly growing epidemic.

Physical activity has been put forward as an important and modifiable

factor influencing people's health. Participation in regular physical activity has been associated with substantial health benefits [13].

Aims and Objectives

Aim: To study the effectiveness of school based interventions in increasing the physical activity and improving the physical fitness of obese children in age group between 10-16 yr.

Objectives:

1. Primary objective: To measure changes in physical activity pre and post intervention using youth physical activity questionnaire.
2. To measure changes in physical fitness pre and post intervention (fitness gram score).

Secondary objective:

1. To measure BMI pre and post intervention in obese children.
2. To measure percent body fat pre and post intervention
3. To measure the change obtained in the parameters of fitness (fitness gram) in children of normal weight and compare with obese children.

Hypothesis

H1-School based interventions are effective in increasing the physical activity and improving the physical fitness of obese children in age group between 10-16 yr.

Null hypothesis: school based interventions are NOT effective in increasing the physical activity and improving the physical fitness of obese children in age group between 10-16 yr.

Research Question

Whether school based exercise programmed is effective in improving the physical fitness of obese children in the age group between 10-16 yr.

Methodology

Study design: Randomized control trial.

Study setting: various schools in Pune

Study population: school going children's age between 10-16

Sample size: total 300 subjects (Two groups, control and interventional, 150 in each group).

Method of sampling: simple random sampling.

Duration of study: Three years.

Inclusion Criteria

Selection of schools: Pune city will be distributed into different geographical zones. The list of SSC board schools will be procured from the SSC board. And ICSE schools from ICSE board. Then Schools which agree to participate will be selected randomly from different zones of the city Government schools, Government aided schools and Private schools will be included to consider different socioeconomic strata students. Recruitment of the schools to participate in the study will be based on their willingness to implement the classroom physical education, physical training to children and co-operation with random assignment into control and

interventional groups

1. Children with BMI \geq 95thile
2. School going children age between 10-16
3. Both sex included

Exclusion Criteria:

Students having any known endocrine pathology.
Students having any known respiratory problem.
Students having any known musculoskeletal problems.
Students having any known neurological problems.

Study Procedure

1. Informed parental consent and student consent will be taken for screening into participation in the study.
2. Subjects will be selected according to inclusion and exclusion criteria.
3. Height and weight were measured using the standard procedures.
4. Body fat % will be analyzed by body fat analyzer machine (TANITA).for both control and experimental groups.
5. According to their BMI values Children's then will be categorized into normal, overweight and obese.
6. children will then be given a structured questionnaire Y-PAQ and parental questionnaire to obtain information on the level of physical activity and parental awareness about their children [19,20]. (Appendix B&C)
7. Interventional schools will be given a structured physical activities programme for 6 month of one academic year.
8. Classroom education teaching programme will be incorporated at the beginning of the study followed by 3 month, which will include the topic on General health education about obesity, lifestyle measures and physical activity to prevent future risk factors.
9. Children excluded from the study will be given a modified play activity as per their capacity.
10. Control groups schools will be given their regular health curriculum and PE (physical education) classes.
11. Fitness gram activity includes 21:
 - One-mile run test to measure aerobic capacity 18.
 - Body composition will be measured by BMI and percent body fat.
 - Physical activity (muscle strength, endurance and flexibility) component includes test
 - Curl-up (no. completed)
 - Trunk lift (inches)
 - 90° push-up (no. completed)
 - Back-saver sit & reach test

Discussion

Our study suggests that School based interventions are effective in increasing the physical activity and improving the physical fitness of obese children in age group between 10-16 yr. similar study done by Sanjay Kalra and A. G. Unnikrishnan has reviewed the weight problem of obesity in India. In India, many studies have shown that the prevalence of overweight among adolescents varies between 10%

and 30%. The results of studies among adolescents from parts of Punjab, Maharashtra, Delhi, and South India revealed that the prevalence of overweight and obesity was high (11%–29%). In Pune, Maharashtra, studies among 1228 boys in the age group of 10–15 years indicated that nearly 20% were overweight, whereas 5.7% were obese. Our study results also matches with above findings. Fitness programme components has shown drastic changes in the pre and post values after implementation of 6 month physical fitness programme. Low levels of physical activity, watching television, and consuming junk foods are associated with a higher prevalence of overweight. Thus, participation in household activities and regular physical exercise could help in lowering the prevalence of overweight and obesity.

ANOTHER Study done by Steven L. Gortmaker et al (1999) in the randomized controlled field trial evaluated the impact of a school-based health behavior intervention known as Planet Health on obesity among boys and girls in grades 6 to 8. They have found that prevalence of obesity among girls in intervention schools was reduced compared with controls. In our study also we have found similar results in control group. We have included the topics on awareness of General health education about obesity, lifestyle measures and physical activity to prevent future risk factors. The probable reason for the above results may be because of

- (a) Diet modification or awareness of reduced calorie intake;
- (b) Increased activity levels in school curriculum;
- (c) Decreased sedentary behavior;
- (d) Family involvement /parental awareness ;
- (e) Behavioral changes

Russell R. Pate et al (2006) in the review article stated that Schools are potentially attractive settings to promote positive health behaviors because students spend large amounts of time in the school environment. In our study also we have given play activity such as football, running and modified exercise P.T régime in control group, which may lead the students in improving in their physical activity and also in their perception towards the sport.

Clinical Message

Preventing obesity among adults, children and young people is a key public health challenge. From our study there is evidence to suggest that interventions to prevent obesity in adolescent age group are more effective if they are multi-component, ideally addressing diet and physical activity together. Our Research suggests that efforts to decrease time spent in sedentary activities may be an intervention that should be pursued in addition to interventions designed specifically to promote physical activity in school going children. Schools should start implementing nutritional and fitness policies (health promotion programme) in their curriculum for the future benefits of their students.

Bibliography

1. WHO consultation on obesity. Special issues in the management of obesity in childhood and adolescence. In: obesity preventing and managing the global epidemic Geneva: WHO, 1998; pp 231-47.
2. WHO (World Health Organization). The World Health Report: Reducing Risks, Promoting Healthy Life. Geneva: World Health Organisation, 2002.
3. WHO (World Health Organisation). Obesity: Preventing and managing the global Epidemic. Report of ITS Consultation on Obesity. WHO, Geneva, 1998.
4. Obesity: preventing and managing the global epidemic. Report of a WHO consultation. Geneva, World Health Organisation 2000 (WHO Technical Report Series, No.894)
5. Kalra S, Unnikrishnan AG. Obesity in India: The weight of the nation. *J Med Nutr Nutraceut* 2012; 1:37-41.
6. Kissebah AH, Freedman DS, Peiris AN. Health risks of obesity. *Med Clin North Am* 1989; 73: 111-38.
7. Baron RB. Obesity in chapter on nutrition, edited by Tierney Jr. LM, McPhee SJ, Papadakis MA, *Current Medical Diagnosis and Treatment* 2003, 42nd Ed, New Delhi, Lange Medical Books/McGraw-Hill, 2003; 1224-7.
8. Després JP, Lemieux I, Prud'homme D. Treatment of obesity: need to focus on high risk abdominally obese patients. *Br Med J* 2001; 322: 716-20.
9. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing a standard definition for child overweight and obesity worldwide international survey. *BMJ* 2000; 320: 1240-1243
10. Steven L. Gortmaker, PhD; Karen Peterson, RD, ScD; Jean Wiecha, PhD; Arthur M. Sobol, AM; Sujata Dixit, PhD; Mary Kay Fox, MEd, RD; Nan Laird, PhD. Reducing Obesity via a School-Based Interdisciplinary Intervention Among Youth ARCH PEDIATR ADOLESC MED/VOL 153, APR 1999
11. John McLennan, MBBS, FRACP Obesity in children Tackling a growing problem general paediatrician, Bendigo, Victoria
12. O Pinhas-Hamiel, S Singer, N Pilpel, A Fradkin, D Modan and B Reichman. Health-related quality of life among children and adolescents: associations with obesity. *International Journal of Obesity* (2006) 30, 267–272
13. Childhood Obesity: Future Directions and Research Priorities James O. Hill and Frederick L. Trowbridge, *Pediatrics* 1998;101;570-574
14. Biddle SJ, Gorely T, Stensel DJ: Health-enhancing physical activity and sedentary behaviour in children and adolescents. *J Sports Sci* 2004, 22:679-701.
15. Tyagi S. Physical fitness norms for boys and girls in grade nine through twelve of Delhi state. (Thesis, Jiwaji University, Nov 2011). Chapter 1; pg 13. Available from: <http://shodhganga.inflibnet.ac.in/handle/10603/3150> (viewed on 03/06/2011)
16. Brown S, Miller W, Eason J. Exercise Physiology – Basis of Human

- Movement in Health and Disease. Philadelphia: Lippincott Williams and Wilkins; 2006. Part 2: Exercise Performance for specific populations. Chapter 15, Pediatric Exercise Physiology; pg. 365.)
17. Biswakarma, Bahadur R. Survey of health related physical fitness of high school boys of different countries. (Thesis, Lakshmi Bai National University of Physical Education, Sept 2011). Chapter 1; pg 10. Available from: <http://shodhganga.inflibnet.ac.in/handle/10603/2855> (Viewed on 03/06/2011)
18. George, J. D. et al. VO₂max estimation from a submaximal 1-mile track jog for fit college-age individuals. *Medicine and Science in Sports and Exercise*, 25, 401-406, 1993.
19. Wolf IS, Hunter DJ, Colditz GA, et al. Reproducibility and validity of a self administered physical activity questionnaire. *Int J Epidemiol*. 1994; 23:991-999.
20. Ref: Mai J.M. Chinapaw,¹ Lidwine B. Mokkink,² Mireille N.M. van Poppel,¹ Willem van Mechelen¹ and Caroline B. Terwee²- Physical Activity Questionnaires for Youth. A Systematic Review of Measurement Properties *Sports Med* 2010; 40 (7): 539-563
21. Welk G, Meredith M. FITNESSGRAM/ACTIVITYGRAM Reference Guide. 3rd ed. Dallas, TX: The Cooper Institute (2008). Section I: Background and History of FITNESSGRAM. Chapter 1, Introduction to FITNESSGRAM; pg. 2-3. Available from: http://www.cooperinstitute.org/pub/file.cfm?item_type=xm_file&id=662.

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